

TENT COOPERATION TRE

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION
(PCT Rule 61.2)

| | |
|---|---|
| Date of mailing: 04 January 2001 (04.01.01) | To: Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE in its capacity as elected Office |
| International application No.: PCT/AU00/00719 | Applicant's or agent's file reference: 9099/27282 |
| International filing date: 23 June 2000 (23.06.00) | Priority date: 24 June 1999 (24.06.99) |
| Applicant: JACKSON, Alan et al | |

1. The designated Office is hereby notified of its election made:

in the demand filed with the International preliminary Examining Authority on:

27 October 2000 (27.10.00)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer: J. Zahra Telephone No.: (41-22) 338.83.38 |
|---|---|

PATENT COOPERATION TREATY

10/019474

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

WRAY & ASSOCIATES
239 Adelaide Terrace
Perth, Western Australia 6000
AUSTRALIA

Date of mailing (day/month/year)
23 January 2002 (23.01.02)

Applicant's or agent's file reference
9099/27282

IMPORTANT NOTIFICATION

International application No.
PCT/AU00/00719

International filing date (day/month/year)
23 June 2000 (23.06.00)

1. The following indications appeared on record concerning:

the applicant the inventor the agent the common representative

Name and Address

WOODSIDE ENERGY LIMITED
1 Adelaide Terrace
Perth, Western Australia 6000
Australia

State of Nationality

AU

AU

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

the person the name the address the nationality the residence

Name and Address

METASOURCE PTY LTD
255 St George's Terrace
Perth, WA 6000
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

METASOURCE PTY LTD is now applicant for all designated States except US. WOODSIDE ENERGY LIMITED is no longer applicant for this International Application and therefore has been deleted from our records.

4. A copy of this notification has been sent to:

| | |
|--|--|
| <input checked="" type="checkbox"/> the receiving Office | <input type="checkbox"/> the designated Offices concerned |
| <input type="checkbox"/> the International Searching Authority | <input checked="" type="checkbox"/> the elected Offices concerned |
| <input type="checkbox"/> the International Preliminary Examining Authority | <input checked="" type="checkbox"/> other: WOODSIDE ENERGY LIMITED |

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Anne KARKACHI

Telephone No.: (41-22) 338.83.38

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
4 January 2001 (04.01.2001)

PCT

(10) International Publication Number
WO 01/00755 A1

(51) International Patent Classification⁷:

C10L 3/10

(74) Agent: WRAY & ASSOCIATES; 239 Adelaide Terrace,
Perth, Western Australia 6000 (AU).

(21) International Application Number:

PCT/AU00/00719

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(22) International Filing Date:

23 June 2000 (23.06.2000)

(25) Filing Language:

English

(26) Publication Language:

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(30) Priority Data:

PQ 1188

24 June 1999 (24.06.1999) AU

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **WOOD-**
SIDE ENERGY LIMITED [AU/AU]; 1 Adelaide Ter-
race, Perth, Western Australia 6000 (AU).

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(72) Inventors; and
(75) Inventors/Applicants (*for US only*): **JACKSON, Alan**
[AU/AU]; Woodside Energy Limited, 1 Adelaide Terrace,
Perth, Western Australia 6000 (AU). **AMIN, Robert**
[DK/AU]; Department of Petroleum Engineering, Curtin
University of Technology, Bentley, Perth, Western Aus-
tralia 6102 (AU).

WO 01/00755 A1

(54) Title: NATURAL GAS HYDRATE AND METHOD FOR PRODUCING SAME

(57) Abstract: A method for the production of the natural gas hydrate characterised by the steps of: combining natural gas and water to form a natural-gas water system and an agent adapted to reduce the natural gas-water interfacial tension to form a natural-gas water-agent system, allowing the natural gas-water-agent system to reach equilibrium at elevated pressure and ambient temperature and reducing the temperature of the natural gas-water-agent system to initiate the formation of the natural gas hydrate.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU00/00719

A. CLASSIFICATION OF SUBJECT MATTERInt. Cl. ⁷: C10L 3/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C10L 3/10, 3/06, 3/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU:IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT:(HYDRATE+ or CLATHRAT+) and (SULPHONAT+ OR SULFONAT+ OR SULPHAT+ OR SULFAT+)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|------------------------------------|
| X | US 5 536 893 A (Gudmundsson) 16 July 1996 See column(s) 2 lines 22-63, 5 lines 9-35, 7 lines 14-27, 9 lines 61-67 and Figure 1. | 1-2, 7-19, 23, 27, 29-30, 32-34 |
| X | WO 93 01153 A (Gudmundsson) 21 January 1993 See page(s) 2 lines 18-19, 7 lines 5-7, 9 lines 11-23, 10 lines 14-21, 14 lines 12-16 and Figure 1. | 1-2, 7-19, 23, 27, 29-30, 32-34 |
| X | WO 99 19662 A (MOBIL OIL CORPORATION) 22 April 1999 See page 1 lines 8-23. | 1-2 |

Further documents are listed in the continuation of Box C See patent family annex

| | |
|---|--|
| * Special categories of cited documents: | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| "A" document defining the general state of the art which is not considered to be of particular relevance | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| "E" earlier application or patent but published on or after the international filing date | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" document member of the same patent family |
| "O" document referring to an oral disclosure, use, exhibition or other means | |
| "P" document published prior to the international filing date but later than the priority date claimed | |

Date of the actual completion of the international search

15 August 2000

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaaustralia.gov.au
Facsimile No. (02) 6285 3929

Date of mailing of the international search report

25 AUG 2000

Authorized officer

JOHN DEUIS
Telephone No : (02) 6283 2146

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU00/00719

| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|---|---|----------------------------------|
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| A | US 3 975 167 A (Nierman) 17 August 1976 | |
| A | GB 2 309 227 A (British Gas plc) 23 July 1997 | |

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU00/00719

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in Search Report | | | Patent Family Member | | | | |
|--|---------|------|----------------------|----|---------|----|----------|
| US | 5536893 | NONE | | | | | |
| WO | 9301153 | EP | 594616 | NO | 900395 | NO | 9000395 |
| WO | 9919662 | AU | 95825/98 | EP | 1025385 | NO | 20001861 |
| | | US | 5964093 | | | | |
| US | 3975167 | AU | 12577/76 | CA | 1034897 | CA | 1056327 |
| | | DK | 1386/76 | GB | 1534768 | GB | 1534769 |
| | | NO | 761027 | | | | |
| GB | 2309227 | AU | 13865/97 | CA | 2214373 | CN | 1181806 |
| | | DK | 1007/97 | EP | 820574 | NZ | 325367 |
| | | PL | 322305 | WO | 9726494 | | |

END OF ANNEX

**ATENT COOPERATION TREA
PCT
INTERNATIONAL PRELIMINARY EXAMINATION**

(PCT Article 36 and Rule 70)

| | |
|-------|-------------|
| REC'D | 03 MAY 2001 |
| WIPO | REPORT |
| | PCT |

14

| | | | |
|--|--|--|--|
| Applicant's or agent's file reference 27282 | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416). | |
| International Application No. PCT/AU00/00719 | International Filing Date (day/month/year) 23 June 2000 | Priority Date (day/month/year) 24 June 1999 | |
| International Patent Classification (IPC) or national classification and IPC Int. Cl. 7 C10L 3/10 | | | |
| Applicant WOODSIDE ENERGY LIMITED et al | | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 14 sheet(s).

3. This report contains indications relating to the following items:

- | | |
|------|---|
| I | <input checked="" type="checkbox"/> Basis of the report |
| II | <input type="checkbox"/> Priority |
| III | <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| IV | <input type="checkbox"/> Lack of unity of invention |
| V | <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI | <input type="checkbox"/> Certain documents cited |
| VII | <input checked="" type="checkbox"/> Certain defects in the international application |
| VIII | <input type="checkbox"/> Certain observations on the international application |

| | |
|---|---|
| Date of submission of the demand 27 October 2000 | Date of completion of the report 20 April 2001 |
| Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929 | Authorized Officer JOHN DEUIS Telephone No. (02) 6283 2146 |

I. Basis of the report

1. With regard to the elements of the international application:*

- the international application as originally filed.
- the description, pages , as originally filed,
 pages , filed with the demand,
 pages 1-9, received on 14 February 2001 with the letter of 12 February 2001
- the claims, pages , as originally filed,
 pages , as amended (together with any statement) under Article 19,
 pages , filed with the demand,
 pages 10-14, received on 14 February 2001 with the letter of 12 February 2001
- the drawings, pages , as originally filed,
 pages , filed with the demand,
 pages , received on with the letter of
- the sequence listing part of the description:
 pages , as originally filed
 pages , filed with the demand
 pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/fig.

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | |
|-------------------------------|-------------|-----|
| Novelty (N) | Claims 1-43 | YES |
| | Claims | NO |
| Inventive step (IS) | Claims 1-43 | YES |
| | Claims | NO |
| Industrial applicability (IA) | Claims 1-43 | YES |
| | Claims | NO |

2. Citations and explanations (Rule 70.7)

None of the individual citations disclose all the essential features as claimed. Claims 1-43 are novel and involve an inventive step as they characterise a method for the production of the natural gas hydrate by combining natural gas and water to form a natural-gas water system, in that the natural gas-water system is allowed to reach equilibrium at elevated pressure and ambient temperature, and reducing the temperature to initiate the formation of the natural gas hydrate.

The closest art found was:

US 5536 893 A (Gudmundsson) 16 July 1996

WO 9301153 A (Gudmundsson) 21 January 1993

WO 9919662 A (MOBIL OIL CORPORATION) 22 April 1999

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU00/00719

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claims 42-43 fails to meet requirements of rule 6.2(a).